

USSR

UDC 632.95

MEL'NIKOV, N. N., KHASKIN, B. A., STONOV, L. D., SABLINA, I. V., GORDON, O. G., and GRUZINSKAYA, N. A.

"Desiccant-Defoliant"

USSR Authors' Certificate No 249113, filed 28 Mar 68, published 20 Jan 70
(from Izv-Khimiya, No 20 (II), 25 Oct 70, Abstract No 20 1624P by N. A. GRUZINSKAYA)

Translation: Salts of 4,4'-dipyridylum of general formula $\left[\text{(MeO)}_n \text{NC}_5\text{H}_3\text{C}_5\text{H}_3\text{NMe} \right]^+$
 $\left[\text{(MeO)}_2\text{P(X)O} \right]^-_m (\text{I})$, where X = O or S, n = 1 when m = 2 or n = 0 when m = 1,
are used as plant desiccant-defoliants. I's can be used for the desiccation
and defoliation of cotton, potatoes and fruit crops in doses of 0.8-2.5 kg/ha.

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UDC 632.95

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MEL'NIKOV, N. N., STONOV, L. D., KHASKIN, B. A., GORDON, O. G., USACHEVA, N. M.,
SARLINA, I. V., GRUZINSKAYA, N. A.

"New Herbicide and Desiccant --- Bipyridyl Phosphate"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection -- collection of works), No 1, Moscow, 1970, pp 167-173 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N492)

Translation: A series of phosphorus-containing salts of 4,4'-bipyridylium with the formula $[NC_5H_4-C_5H_4NCH_3]^+[(RO)OP(=X)YR']^-$ (I) (R, R', X, Y, the yield in %, the melting point in °C, n_D^{20} are presented): Me, Me, O, O, 58, 95-102, --; Me, Pr, O, O, 60, --; 1.4190; Me, Me, S, O, 59, 210 (dil.), --; Me, Me, S, S, 51, 106-7.5, --; Me, 2,4,5-Cl₃C₆H₂, S, O, 67, 84-5, --; Et, 2,4,5-Cl₃C₆H₂, S, O, 44, --, 1.6141 were synthesized. In order to obtain I, equimolecular amounts of 4,5-bipyridyl and esters of phosphorus acids were heated for 15-20 hours in a solvent (C₆H₆, alcohol, petroleum ether) at 40-100°. With alkylation of the 4,4'-bipyridyl in an excess of esters of phosphorus acids with

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MEL'NIKOV, N. N., et al., Khim. sredstva zashchity rast., No 1, Moscow, 1970, pp 167-173

heating (70-100°) for 10-15 hours in the absence of a solvent or at 20-25° for 2-3 weeks, substances with the formula $[\text{CH}_3\text{NC}_5\text{H}_4-\text{C}_5\text{H}_4\text{NCH}_3]^{2+}[(\text{RX})\text{OP}(\text{O})\text{YR}']^{2-}$

(II) are obtained (R, R', X, Y, the yield in %, and the melting point in °C are presented): Me, Me, O, O, 63, 117-120 (IIa); Me, Me, S, O, 34, 52-61.5; Me, Et, S, O, 30, 78-80; Me, Me, S, S, 68, 133 (dil.); Me, Et, S, S, 61, 118 (dil.); Me, 2,4,5-Cl₃C₆H₂, S, O, 80, 166 (dil.). The IIa has low toxicity for warm blooded animals, significant herbicidal activity and a high defoliating effect.

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USSR

ASHIN, V. M., ZUBOV, B. V., MURINA, T. M., PROKHOROV, A. M., ROGACHEV, A. A.,
and SABINA, N. I., Physics Institute imeni P. N. Lebedev, Academy of Sciences
USSR

"Radiative Recombination of Biexcitons in Germanium"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 62, No 2, Feb
72, pp 737-745

Abstract: The article describes results of a study undertaken to obtain additional data on the nature of the long-wave recombination radiation line in germanium, as well as to determine the binding energy of biexcitons. Some preliminary findings were published in previous articles by the authors. Experiments were performed on samples of pure n- and p-type germanium with a total impurity carrier concentration on the order of $5 \cdot 10^{14} \text{ cm}^{-3}$. Two methods of excitation were used: via surface and volume. Data were obtained at $T = 4.2^\circ \text{ K}$ in a wide range of excitation level variations showing the dependence of the intensity of an exciton line with a quantum energy $h\nu = 0.713 \text{ eV}$ on the intensity of a biexciton line with $h\nu = 0.708 \text{ eV}$. A quadratic

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ASHIN, V. M., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 62, No 2, Feb 72, pp 737-745

dependence is observed up to concentrations $n_p \approx 3 \cdot 10^{14} \text{ cm}^{-3}$, while at higher exciton levels there is a linear dependence, which can be explained by the effect of nonequilibrium phonons produced when the excitons are bound into molecules. For character E_1 (dissociation energy of an exciton molecule) and ΔB ("excess" energy which exciton receives during phonon emission) were shown to be 0.4 eV and 0.6 eV respectively. The energy of the phonon produced in the formation of the exciton is 1.6 eV . The experimental results are in good agreement with the 0.4 eV line in germanium. Regarding the character of the E_1 and its energy position, it is suggested that there is a linear relationship between the formation of an exciton is accompanied by acoustic phonon emission at a threshold.

The authors thank L. V. KUBITSKY and S. M. RYKOVIN for a useful discussion and a number of questions touched upon in the article.

1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--GIANT FLUCTUATIONS OF PHOTOCURRENT IN GERMANIUM -U--
AUTHOR--(03)-ROGACHEV, A.A., SABLINA, N.I., ASNIN, V.M.
COUNTRY OF INFO--USSR
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 3, P. 162-5 (FEB. 1970)
DATE PUBLISHED----FEB70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--GERMANIUM DIODE, PHOTO EMF, CURRENT DENSITY, EXCITON, HEAT OF
SUBLIMATION, CARRIER DENSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1783 STEP NO--US/0000/70/011/003/0162/0165
CIRC ACCESSION NO--AP0133688
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133688

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PRESENTS SOME RESULTS OF AN EXPERIMENTAL STUDY OF PHOTOCURRENT FLUCTUATIONS IN A GERMANIUM P-I-N JIODE UNDER CONDITIONS WHEN THE EXISTENCE OF AN EXCITON CONDENSATE IS EXPECTED. IT IS SHOWN THAT THESE CONDITIONS EXIST WHEN THE DENSITY OF THE EXCITON GAS IS CLOSE ENOUGH TO THE DENSITY OF THE PARTICLES IN THE LIQUID PHASE, AND THAT THE HEAT OF SUBLIMATION IS CLOSE TO 1 MEV. (10 REFS.). FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--BIEXCITONS IN GERMANIUM -U-
AUTHOR--(03)-ASNIN, V.M., ROGACHEV, A.A., SABLINA, N.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(4), 808-11
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--GERMANIUM, METAL SINGLE CRYSTAL, PHONON, EXCITON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--1998/0929 STEP NO--UR/0449/70/004/004/0808/0811
CIRC ACCESSION NO--AP0121531
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121531

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF ESTABLISHING AN EQUIL. BETWEEN EXCITONS AND BIEXCITONS IN PURE GE SINGLE CRYSTALS WAS STUDIED EXPTL. NONEQUIL. CARRIERS WERE GENERATED BY LIGHT PULSES WITH DURATION OF 1.5 MUSEC; THE CARRIER LIFETIME WITH RESPECT TO INTERBAND RECOMBINATION WAS 20-60 MUSEC. THE CARRIER CONC. WAS CONTROLLED BY CHANGING EITHER THE INTENSITY OF GENERATION OR THE DELAY BETWEEN THE PULSE AND THE MOMENT OF MEASURING THE RECOMBINATION RADIATION. IN THE WHOLE CONC. REGION, THE RELATION N_{SUBB} SIMILAR TO N_{SUBEX} PRIME2 WAS ESTABLISHED, WHERE N_{SUBB} AND N_{SUBEX} STAND FOR BIEXCITON AND EXCITON CONCNS., RESP. WITH INCREASING PULSE MEASUREMENT DELAY, THE INTENSITY OF THE 0.713-EV EXCITON LINE INCREASES, BUT THAT OF THE 0.709-EV BIEXCITON LINE REMAINS UNALTERED. THE RESULTS ARE EXPLAINED BY ASSUMING THAT NONEQUIL. PHONONS GENERATED TOGETHER WITH BIEXCITONS SHIFT THE EQUIL., AND THE GENERATION OF FREE EXCITONS IS PREFERRED. FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--03JUL70

TITLE--GIANT FLUCTUATIONS OF A PHOTOCURRENT IN GERMANIUM -U-

AUTHOR--ASHIN, V.M., BOGACHEV, A.A., SARLINA, N.I.

COUNTRY OF INFO--USSR

SOURCE--FISIKA ZH. EKSP. TEOR. FIZ. 1970, 11(3), 162-5

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GERMANIUM, PN JUNCTION, PHOTOELECTRIC EFFECT, ELECTRIC CURRENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1979/1066

STEP, NC--UR/C386/70/011/003/0162/0165

CIRC ACCESSION NO--APOC47507

UNCLASSIFIED

Acc. Nr:

AP0047507

Abstracting Service:

CHEMICAL ABST. 5/70

Ref. Code:

UR 0886

105120d Giant fluctuations of a photocurrent in germanium.
Asnin, V. M.; Rogachev, A. A.; Sablina, N. I. (Fiz.-Tekh. Inst.
im. Lofe, Leningrad, USSR). *Pis'ma Zh. Eksp. Teor. Fiz.* 1970,
11(3), 162-5 (Russ). A 1 sq. cm *p-n* diode was connected to
the 10-mm side of a $10 \times 40 \times 1$ mm Ge plate. Photocurrent
signals due to the appearance of free current carriers at the *p-n*
junction were recorded. At $\leq 4.2^\circ\text{K}$ excitons with a concn. of
(2-3) $\times 10^{15}/\text{cm}^3$ gave an irregular pulsed current. The fluctu-
ations varied from several μsec to 0.1 μsec and the amplitude was
of the order of several mA, which corresponded to a change of
 10^{-8} - 10^{-10} Coulomb passing through the *p-n* junction. The re-
sults confirmed previous conclusions [Asnin, *et al.* (1969)] that a
condensate in Ge occurs when the d. of the exciton gas had a d.
close to the d. of particles in the liq. phase and that the heat of
sublimation is close to 1 mev. The fluctuations were attributed
to the entrance of "drops" of the exciton condensate into the *p-n*
junction field.

GBIR

REEL/FRAME

19791066

180+

Crystals & Semiconductors

USSR

ASNIN, V. M., ROGACHEV, A. A. and SABLINA, N. I., Physicotechnical Institute
imeni A. F. Ioffe, Academy of Sciences USSR

"Giant Photocurrent Fluctuations in Germanium"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fizika, Vol. 11,
No. 3, 5 Feb 70, pp 162-165

Abstract: An experimental study of photocurrent fluctuations in a germanium $p = i = n$ diode was conducted under conditions in which an exciton condensate should exist. The idea was that droplets of exciton concentrate, if they exist, will be attracted by the inhomogeneous electric field to the pn-junction and will yield a current pulse upon being destroyed in the junction. By measuring the charge occurring during this pulse, one can determine the number of excitons in a droplet and hence the dimensions of the droplets by using data on the density of the condensate. Measurements conducted at $T \leq 4.2^\circ\text{K}$ showed that after the creation of excitons with a concentration greater than $2-3 \cdot 10^{15} \text{ cm}^{-3}$ in a region fairly close to the pn-junction, the shape of the current pulse flowing through the pn-junction became irregular. Two types of fluctuations were observed: long fluctuations several microseconds in length and short fluctuations about 0.1 usec in length. The amplitude of these fluctuations at maximum excitation levels of $\sim 5 \cdot 10^{15} \text{ cm}^{-3}$ reached values of the order of several

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ASNIN, V. M., ET AL, Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki, Vol. 11, No. 3, 5 Feb 70, pp 162-165

milliampere meters, corresponding to a charge of 10^{-8} - 10^{-10} coul. passing through the pn-junction. Fluctuations of this magnitude are explained by entry of droplets of exciton concentrate into the pn-junction field. The magnitude and length of the fluctuations quickly dropped as the excitation level or the distance of the excitation region from the pn junction decreased. This is attributed to the rapid decrease in the size of the droplets entering the region of the pn junction. It is concluded that the results verify the hypothesis that a condensate arises in germanium under conditions in which the density of the exciton gas is sufficiently close to the density of particles in the liquid phase and that the heat of sublimation is close to 1 Mev.

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1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--REMARKS ON THE BROKEN NONLINEAR CHIRAL U,3, TIMES U,3, DYNAMICS OF
HADRONS -U-
AUTHOR-(02)-SABO, V.I., LOMSADE, YU.M.
COUNTRY OF INFO--USSR
SOURCE--ITF-70-20 1970. 14P. DEP. CFSTI
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--STRONG NUCLEAR INTERACTION, ELECTROMAGNETIC INTERACTION,
PARTICLE SYMMETRY, MATRIX FUNCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/1916 STEP NO--UR/0000/70/000/000/0014/0014
CIRC ACCESSION NO--AT0127317

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0127317

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN CONTRAST TO PREVIOUS WORK THE
BROKEN NONLINEAR CHIRAL $U(3)$ TIMES $U(3)$ DYNAMICS OF STRONG,
ELECTROMAGNETIC AND WEAK INTERACTIONS OF HADRONS IS CONSIDERED IN THE
MOST GENERAL FORM. SUCH A GENERAL CONSIDERATION REDUCES THE NUMBER OF
PREDICTIONS ONL BUT DOES NOT CHANGE THEM. (AUTH). FACILITY:
AKADEMIYA NAUK UKRAINSKOI SSR, KIEV. INSTITUT TEORETICHESKOI FIZIKI.

UNCLASSIFIED

USSR

UDC 533.6.013.42

SABODASH, P. F.

"Concerning the Action of a Movable Load Upon an Elastic Plate, Covering an Acoustic Semispace"

Tashkent, Vopr. Vychisl. i Prikl. Mat. -- Sbornik (Question of Computational and Applied Mathematics -- Collection of Works), No 5, 1971, pp 145-154 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V333 by A. G. Gorshkov)

Translation: The article deals with a thin infinite plate, which covers a semi-space occupied by an ideal compressible fluid. The plate is acted upon by a normal load distributed along a circle, the radius of which increases with time. To solve the equation of transverse vibrations of the plate and the wave equation of acoustics (which describes the movements of the medium), integral transformations are used: Laplace transforms within time and Hankel transforms along a radial coordinate. The inversion integrals are approximately estimated on the basis of asymptotic expansions for the integrands. The obtained solution for the initial moments of time is generalized for the case of a plate, the material of which is linearly viscoelastic.

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UDC 533.6.011

SABODASH, P. F.

"A Dynamical Problem for a Layer of Ideal Compressible Fluid"

V sb. Materialy Vses. konferentsii po krayev, zadacham (Materials of the All-Union Conference on Boundary Value Problems--collection of works), Kazan', Kazan' Univ., 1970, pp 210-215 (from RZh-Mekhanika, No 12, Dec 70, Abstract No 12B303, Resume)

Translation: The problem of defining the pressure field in a plane-parallel layer of ideal compressible fluid is examined. It is assumed that the disturbed state in the layer is induced by a normal pressure source, travelling along the surface of the layer at a constant rate D , while the pressure profile remains unchanged in the system of coordinate associated with the moving front. On the other hand, the layer of compressible fluid is bounded by an absolutely, immobile base (plane problem). An exact solution to the problem posed is obtained both for subsonic and supersonic motion of the source.

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1/2 025
UNCLASSIFIED
TITLE--STUDY OF THE WAVE FIELD IN AN ELASTIC PLATE WITH FINITE THICKNESS
UNDER THE ACTION OF A TRANSIENT LOAD -U-
AUTHOR--SABODASH, P.F.
COUNTRY OF INFO--USSR
SOURCE--PROBLEMY PROCHNOSTI, VOL. 2, APR. 1970, P. 64-69
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--ELASTICITY THEORY, MATHEMATIC EXPRESSION, STRAIN, STRESS
DISTRIBUTION, THIN PLATE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0112
STEP NO--UR/3663/70/002/000/0064/0069
CIRC ACCESSION NO--AP0123884
UNCLASSIFIED

2/2 025

CIRC ACCESSION NO--AP0123884

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PROPAGATION OF LOW INTENSITY ELASTIC WAVES INSIDE A PLATE WITH FINITE THICKNESS, EXCITED BY A SOURCE OF TANGENTIAL DISPLACEMENTS APPLIED FROM ONE SIDE OF THE PLATE. IT IS ASSUMED THAT THE MATERIAL BEHAVES IN CONFORMITY WITH THE NONLINEAR HOOKE LAW; ITS PROPERTIES CHANGE CONTINUOUSLY WITH THICKNESS. EXPRESSIONS ARE DERIVED FOR DESCRIBING THE STRESS STRAIN STATE OF THE PLATE.

FACILITY: TSENTRAL'NYI MOSCOW, USSR.

UNCLASSIFIED

SABONIS, I.I.

1 MS 5783
2 Jan 73

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On-duty dispatchers, senior physician for the shift, and the doctors or medical feldshers of all teams on duty that respond to calls independently take care of coding data on the primary record forms.

In order to assess the work at the emergency station of Vilnius, whose volume of work is increasing annually (see Table), the Minsk-72 computer has been used since 1968. The basic principle of the system is as follows: information is gathered according to developed primary record forms which are needed due to the nature and scope of routine operation for the stations administrators, statistical reports, and management bodies. The primary forms of work records are the emergency call card (form No 233a) the latest variant of which has been used at the emergency stations of Vilnius and Kaunas with the permission of the office of health statistics of the USSR Ministry of Health since 1 January 1971; report of the senior physician on duty or the shift; medical personnel record card; dispatcher's report about operation of ambulances during his shift; stub (form No 234) to assess the quality of diagnostics; a record dealing with expenditure of budget resources over a period of one month.

In order to respond to calls promptly and render good care to the sick and victims of accidents it is necessary to use better and more effective forms of organization of the work of different elements of the emergency station. This requires up to date, objective, and sufficient information about the different work indices, possible only by using computers.

The emergency medical service is of primary significance in the public health system, since the people's needs for such service should be met fully and promptly.

Article by I.I. Sabonis and V.B. Gurevskaya, Candidates of Medical Sciences, and M.A. Ginkas, Scientific Research Institute of Experimental and Clinical Medicine of Lithuanian SSR, Vilnius; Moscow, Sovetskaya Zdravokhraneniye, Eurasian, No 11, 1972, submitted 29 June 1972, pp 47-52

USE OF COMPUTERS IN THE EMERGENCY MEDICAL SERVICE

UDC: 614.881-07:681.3

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BIOLOGY
Agriculture

7 USSR

REZNIKOV, A. R., Candidate of Agricultural Sciences and ~~SABSAI, V. D.~~ VNIIEMK
(All Union Order of Labor Red Banner Scientific Research Institute of Essential
Oil Crops)

"The MZS-1.8 Machine for Infection of Rye with Ergot"

Moscow, Traktory i sel'khoz mashiny, No 5, 1970, p 42

Translation: Ergot is the raw material for a number of pure alkaloids and their derivatives, which are peculiar to ergot and are used in the chemical and pharmaceutical industry for production of valuable compounds.

Ergot is cultivated on rye in specialized sovkhoses of the "Iskrasprom" All-Union Society of the Ministry of the Medical Industry. Until recently, infection of rye with ergot was done manually with a board supplied with needles and a felt pillow moistened with the infective fluid. The worker walks along the rows in the rye field, piercing rye ears and infecting them by clapping the board with needles against the pillow. According to the work standard, one worker can treat up to 0.5 hectares per day by this method. The most effective period for infection lasts only 3-4 days (the beginning of the heading stage of the grain). Thus farms having 100-150 hectares of rye for cultivation of ergot need 300-400 men for this work.

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REZNIKOV, A. R. and SABSAY, V. D., Traktory i Sel'khozmasliny, No 5, 1970, p 42

Since such a great expenditure of labor is necessary to infect rye with ergot, (20 man-days per hectare), only around 1,000 hectares in the USSR are infected. In order to satisfy the requirements of the pharmaceutical industry, approximately 4,000 hectares of infected rye would be necessary. In 1965-1966 the State Special Design Bureau of the All-Union Scientific Research Institute of Essential Oil Crops at Simferopol, in collaboration with the Laboratory of Mechanization of the All Union Scientific Research Institute of Medicinal Plants in Moscow, invented an experimental model of a machine for infection of rye with ergot, the MZS-1.8.

The machine is mounted on a self-propelled chassis TL6M-MCh with a road clearance of 1,000 mm and is able to infect rye standing 400-1,200 mm high. It has five pairs of vertical rollers 400 mm high. In each pair of rollers, one is provided with needles and the other covered with sponge rubber. A tractor hydraulic system regulates the height (400 mm).

A special injection nozzle using compressed air to spray the infective fluid on the rye and the rollers is located over the inlet slot of each pair of rollers. Compressed air is supplied from a compressor driven by an independent tractor power takeoff, to the injection nozzles and the excess-pressure tank.

The working rollers are driven by a tractor synchronous power takeoff. The

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REZNIKOV, A. R. and SABSAY, V. D., Traktory i sel'khoz mashiny, No 5, 1970, p. 42.

rate of movement of the ends of the needles is roughly equivalent to the rate of forward movement of the vehicle. This assures very slight bruising of plants.

Each set of rollers processes two rows of rye, sown with a sowing machine with 150 mm between rows. In order to prevent mashing of plants by tractor wheels, it is recommended that rye be sown in strips 10 rows each, with 450 mm between bands, i.e., the usual 24-row field in which the two middle and both end seeders of the sowing apparatus are covered over.

As the machine moves, each two rows of rye are directed by the separators into the opening between the operating rollers. Ears are held by the needles of one of the rollers, punctured and pressed to the rubber roller. The infective fluid is introduced into the grain on moistened needles on the way in and on the way out with additional fluid which is in the pores of the rubberized roller.

The MZS-1.8 machine passed government tests at the Western Machine-Testing Station and was recommended for production of experimental batches. Tests were conducted in the Belorussian SSR at the specialized sovkhos "Pol'shoye Mozheykovo". During the tests from 16 to 25 May, 1967, 60 hectares of rye were infected with ergot. Tests showed that the MZS-1.8 makes possible high-grade infection of rye with ergot and completely fulfills the requirements of agricultural technology. The ergot yield is increased 1.4 times, labor expenditures are decreased thirteen-fold, and direct expenses are reduced 16.6% as compared with manual labor.

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REZNIKOV, A. R. and SABSAY, V. D., Traktory i sel'khoz mashiny, No 5, 1970, p. 42.

The Kherson combine factory, according to the directive of the All-Union society "Lekarsprom", issued an experimental batch of the MZS-1.8 machines (10 of them) for large-scale agricultural testing. The machines were distributed to specialized sovkhozes. In 1968, 300 hectares of rye were infected with the machines. Although machines were used differently on different farms depending on weather conditions, and chiefly on the organization of labor, the work done by one machine in the season varied from 14 hectares at the "Zhen'shen'" sovkhoz to 63 hectares at the sovkhoz "Bol'shoye Mozheykovo." The daily quota was 2 hectares at the "Zhen'shen'" sovkhoz and 8.7 hectares at the "Mostisskom" sovkhoz.

The state tests and large-scale agricultural field testing showed that the MZS-1.8 machine for infection of rye with ergot considerably exceeded the indices set forth in the requirements of agricultural technology.

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USSR

UDC 8.74

AYNEERG, V. D., KONOVODCHENKO, I. G., MOLOSTVOVA, L. V., RUMYANTSEVA, G. D.,
SABSOVICH, L. L.

"Expansion of the Library of Standard Procedures of the TA-1M Translator"

Tr. TsNII stroit. konstruktsiy (Works of the Scientific Research Institute of Structural Parts), 1971, vyp. 20, pp 5-7 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V616)

Translation: A list of developed standard procedures of the TA-1M translator is presented for: 1) formation of matrices and algebraic operations on them; 2) printout of files using the alphanumeric printer; 3) exchange of files in ready-access memory with the external memory of the computer. It is noted that reference to all the developed procedures is made using the standard procedure operator $pN(q_1, q_2, \dots, q_n)$ where N is the library number of the standard procedure, and q_1, q_2, \dots, q_n are its actual parameters in place of which the identifiers of the variables and files, the numbers and arithmetic expressions can be substituted. All of these described procedures are formulated as standard programs in the IS-2 system, and the TA-1M translator is used without auxiliary shaping subprograms. They are written on the magnetic tape of the translator library and find broad application, increasing the volume of the ready-access and external memories used, facilitating the programming process in ALGOL and reducing the solution time of the problems.

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PHYSICS
Acoustics

USSR

UDC 534-8

KOL'TSOVA, I. S., MIKHAYLOV, I. G., and SABUROV, B., Physical-Technical
Institute imeni S. U. Umarov, Tadzhik SSR Academy of Sciences, and Leningrad
State University imeni A. A. Zhdanov, presented by academician A. A. Adkhamov
of the Tadzhik SSR Academy of Sciences

"The Propagation of Ultrasonic Waves in Natural Oil Emulsions"

Dushanbe, Doklady Akademii Nauk Tadzhikskoy SSR, Vol 16, No 8, 1973, pp 28-32

Abstract: Various authors have developed mathematical expressions for the coefficients of absorption of acoustic energy in a dispersion taking into account losses due to difference in viscosity between the two liquids, differing thermal properties, etc. This article reports experimental studies of the relationship between the coefficient of additional absorption and frequency for emulsions of olive oil, linseed oil, and castor oil stabilized by a 0.5% solution of gelatin for the purpose of clarifying the role of the different absorption mechanisms.

The drops of linseed oil had an average diameter of 4 microns; of the other two oils, 8 microns. Emulsions of 1 - 10% by volume at temperatures of 5 - 30°C were tested at frequencies of 3 - 27 Mc. Absorption was found to be a linear function of concentration in all cases. Within the 2% error of 1/2

USSR

KOL'TSOVA, I. S., et al., Doklady Akademii Nauk Tadzhikskoy SSR, Vol 16, No 8, 1973, pp 28-32

measurement, changes in temperatures did not affect the relationship between absorption and frequency.

At frequencies below 25 Mc, the experimental results agree with the theory, but above this frequency there is a divergence, probably due to the use of average values for droplet diameter in the calculations. It is not possible to draw a completely unambiguous conclusion as to dominant mechanisms without additional calculation of energy balances. Making these calculations, one finds that sound absorption in these emulsions apparently is due primarily to heat transfer between the particles in the dispersion medium at frequencies up to 15 Mc, and that at higher frequencies a significant role begins to be played by scattered waves, depending on the shear and volume viscosities of the dispersant and the medium.

2/2

- 16 -

USSR

KOL'TSOVA, I. S.; MIKHAYLOV, I. G.; SABUROV, B.

"Propagation of Ultrasonic Waves in Organic Emulsions"

Leningrad, Vestnik Leningradskogo Universiteta: Fizika - Khimiya; January-March 1973, pp 52-7

Abstract: A pulse method was used in the study of ultrasonic wave absorption in organic emulsions in the 3-27-megacycle frequency range at temperatures of 5 to 20°C. In benzene emulsions with particles averaging 8 microns in size the main kinds of losses are those caused by heat exchange as well as those due to scattering depending on the voluminal and shear viscosities. For bromobenzene and nitrobenzene emulsions with particles averaging 4 microns in size the losses due to heat exchange and friction predominate over other kinds of losses. The difference in the main mechanisms of absorption in the emulsions is reflected in a variation of the supplementary absorption coefficient with frequency and does not affect the variation of the supplementary absorption coefficient with temperature. The results of the experiment are in good agreement with the theoretical data.

1/1

- 31 -

AP0040888

REF. Code

LR01032

PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp/25-11.

CONSTRUCTION OF AUTO-OSCILLATORY ADAPTIVE SYSTEM
WITH VARIABLE STRUCTURE

A. D. ALEKSANDROV, L. S. VALKOV, M. G. GAVRILIN,
L. YA. MALEN'KIY, N. V. SABUROV, V. S. KHABAROV

One of the methods of constructing an adaptive system of control in the class of systems with variable structure is considered. There is suggested a method of the synthesis of the algorithm of the re-adjustment of the adapting device for an autooscillatory system, the re-adjustment based on the application of the method of harmonic linearization. The results of the theory are illustrated with examples.

19750627

6

USSR

UDC 669.721.372

ZUYEV, N. M., IVANOV, A. B., YUKOLOV, V. V., SYALOV, G. N.,
IRTEGOV, N. N., GENKIN, Ye. N., AGALAKOV, V. A.,
SHCHELKOVOGOV, A. A., SABUROV, V. E., and KIRILENKO, I. S.

"Flow Line for Magnesium Production"

Moscow, Tsvetnyye Metally, No 9, Sep 71, pp 36-37

Abstract: An experimental-industrial flow line which uses smelted carnallite as the raw material for the production of magnesium has been established at a Soviet plant. The operation of the flow line is described by reference to a diagram and the distribution of slime (with 20% MgO) by electrolyzers showing the maximum output of slime (up to 60% of its total amount) on the first 3-4 electrolyzers. It is shown that the centralized feeding of diaphragm-type electrolyzers provides a 3-4% increase of magnesium output. To maintain normal temperature conditions and compensate for heat losses, it is necessary to provide for an increase of current intensity and electrolyzer output by 10-12%, in comparison with electrolyzers with individual feeding. Two illustr., three biblio. refs.

1/1

USSR

UDC 669.721.472(088.8)

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., SVALOV, G. N.,
IRTEGOV, N. N., SABUROV, V. F., SHCHELKONOGOV, A. A., GRUDOVSKIY, N. P.,
and KISELEV, A. V., All-Union Scientific Research and Design Institute of
Aluminum, Magnesium, and Electrode Industry, Bereznikovskiy Titanium-Magnesium
Combine

"Method of Cutting-Off the Electrolyte Supply of a Production Line Magnesium
Electrolytic Reduction Cell"

USSR Author's Certificate No 260905, filed 21 Oct 68, published 5 May 70
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G135 P)

Translation: A method is proposed for switching-off the electrolyte supply
to a production line magnesium electrolytic reduction cell for subsequent
diffusion of scum by increasing the temperature of the electrolyte and the
concentration of magnesium chloride. To avert disruption of the operation
of the production line electrolytic reduction cell at the input into the
cathode cell of the electrolytic reduction cell, shields are placed, which
separate the working space of the electrolytic reduction cell from the elec-
trolyte flow in the distribution canal.

1/1

AA0051854

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 2-70

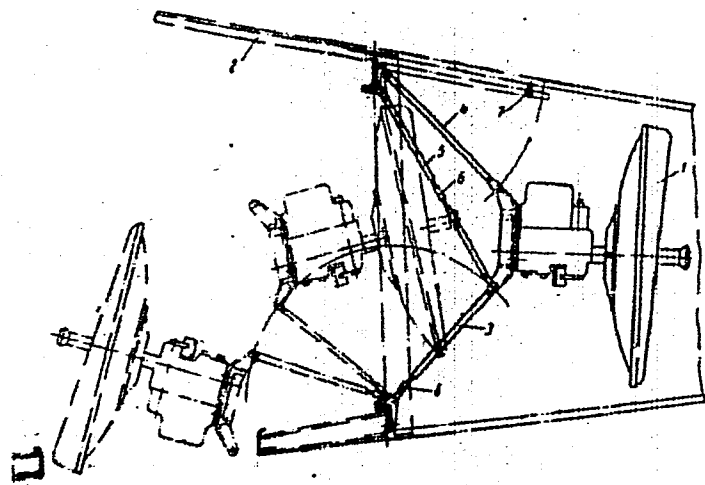
UR 0482

243411 AERIAL FIXING DEVICE for aircraft, comprising a bracket, is improved in having turning removable links with free ends connected to the fuselage. This provides for withdrawal of the aerial via an assembly panel. The device consists of regulating, side and intermediate links 3, 4 and 5. The last two have screw clamps 6. On fuselage 2 is fitted fixer 7. To withdraw the aerial into the assembly panel, the intermediate and side links are disconnected from fixer 7 and link 3 is then turned.

27.2.68 as 1222634/40-23 SABUROV V.I. (15.9.69)
Bul. 16/5.5.69. Class 62c, Int. Cl. B 64d.

19820288

AA0051854



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19820289

1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MIXTURE FOR INOCULATING IRON MELTS -U-
AUTHOR-(03)-GORBUNOV, A.I., SEVASTYANOV, N.S., SABUROV, V.P. S
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 265,138
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--INOCULATION, IRON, LIQUID METAL, CARBON, CALCIUM, METALLURGIC
PATENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/1059 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0130094
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AAC130094

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A MIXT. FOR INOCULATING FE,C
MELTS, THAT RAISES THE DEGREE OF CA ASSIMILATION AND REMOVES THE
PYROEFFECT, CONTAINS CA INTRODUCED IN THE FORM OF A METAL AND FLUORSPAR
IN A 1:2 RATIO.

FACILITY: OMSK POLYTECHNIC INSTITUTE.

UNCLASSIFIED

USSR

GOLENISHCHEV-KUTUZOV, V. A.; SABUROVA, R. V.; SHAMUKOV, N. A. (Kazan' Physics-Engineering Institute, USSR Academy of Sciences)

"Double Acoustical-Magnetic Nuclear-Nuclear Resonance in Crystals with Paramagnetic Impurities"

Leningrad, Solid State Physics; November, 1970; pp 3100-4

ABSTRACT: A description of a method of double acoustical nuclear-nuclear resonance is given. The acoustical nuclear magnetic resonance from the nuclei of paramagnetic ions (Al_2O_3 : 0.07 at. % Cr^{3+}) was detected by this method.

The use of such a method, as shown by the experimental results, raised the sensitivity two orders as compared with a method of single acoustical nuclear magnetic resonance. It is shown that with the method of double resonances it is possible to study more closely the interaction between the crystal lattice and nuclear spins as well as between electron and nuclear spins.

1/1

- 51 -

USSR

UDC: 621.373:530.145.6

POKROVSKIY, Ye. N., SABUROVA, Z. K.

"Effect Which the Design and Volume of the Active Element Have on the Optimum Ratios of the Mixture Components in Helium-Neon Lasers"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. No 10, pp 129-131 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D154)

Translation: It is shown that the product of the optimum pressure of the mixture by the diameter of the capillary of the active element in a helium-neon laser depends on the design and volume of the active element. For an active element of coaxial design, this product differs from the usual relationship, being 2.7 mm Hg per mm. Resumé.

1/1

- 90 -

1/2 018
UNCLASSIFIED
PROCESSING DATE--02OCT70
TITLE--EFFECTS OF BOIL DURATION PRIOR TO CAPPING AND OF 75PERCENT
FERROSILICON PARTICLE SIZE ON THE SILICON ENRICHMENT OF THE TOP OF THE
AUTHOR--(05)--KUNDRASHOV, M.M., SABYEV, M.P., VAINTRAUB, S.S., LASHCHEV,
V.YA., TERZIYAN, P.G.
COUNTRY OF INFO--USSR
SOURCE--METALLURG (MOSCON), 1970, 15(1), 21-3
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--INGOT CASTING, FERROSILICON, PARTICLE SIZE, DISTRIBUTION
COEFFICIENT, SILICON, STEEL PRODUCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1989/1933
STEP NO--UR/0130/70/015/001/0021/0023
CIRC ACCESSION NO--AP010R262
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108262

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. USE OF 75PERCENT 10-29 MM PARTICLE SIZE FERROSILICON AIDS IN THE UNIFORM DISTRIBUTION OF THE SI. THE BOIL TIME OF THE METAL IN THE INGOT BEFORE CHEM. CAPPING HAS A GREATER EFFECT ON THE SI DISTRIBUTION IN THE TOP OF THE INGOT THAN THE 75PERCENT FESI PARTICLE SIZE FRACTION. THE OPTIMUM BOIL TIME FOR THE STEEL IN THE MOLD DEPENDING ON THE INTENSITY OF THE PROCESS SHOULD BE CONSIDERED AS 1.5-3 MIN. THE OPTIMUM 75PERCENT FESI PARTICLE SIZE FRACTION IS 10-30 MM. DATA OBTAINED CAN BE USED FOR OTHER PLANTS WORKING IN SIMILAR CONDITIONS AS THE KOMMUNARSK PLANT WHERE THE WORK WAS DONE.

UNCLASSIFIED

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USSR

SACHAL'SKIY, K. I.

UDC 624.07:534.1

"Harmonic Analysis of Nonlinearly Supported, Structurally Complex Systems"

VI Mezhdunar konf. po nelineynym kolebaniyam. Poznan', 1972 (Sixth International Conference on Nonlinear Oscillations. Poznan', 1972), Varshava, 1972, pp 115-117 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V276)

Translation: Vibrations of systems with nonlinear supports under the action of an harmonic perturbed force acting from the base are investigated. The nonlinear system is divided for analysis into linear subsystems for which the eigenvalues and eigenvectors are determined. Displacement of the system is made up of absolute and relative displacements determined by the elastic properties. The relative displacement is represented in the form of an expansion in terms of the eigenvectors of the system. Differential equations for the motion of the system are made up after calculating the potential and kinetic energies. The resulting equations are solved by expansion into series in terms of powers of the small parameter. The results are represented in the form of recurrent formulas. Vibrations of an aircraft on a nonlinear

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USSR

SACHAL'SKIY, K. I., VI Mezhdunar konf. po nelineynym kolebaniyam. Poznan',
1972, Varshava, 1972, pp 115-117

landing gear under the action of a harmonic load from the base are discussed
as an example. V. S. Gontkevich.

2/2

- 10 -

USSR

UDC 577.3

KOGAN, A. B., ~~SACHAVA, T. S.~~, DOROZHINA, L. I., PAVELKO, V. M., and
GOL'TSEVA, I. N.

"The Mechanism of the Effect of a Constant Magnetic Field"

Vliyaniye Magnitnykh Poley na Biologicheskiye Ob"yekty, pp 56-68

Abstract: An investigation was made of the effect of a constant magnetic field on organisms of different evolutionary levels. During experiments on infusoria, a change in movements, redistribution and reduction of RNA (protoplasmic), and an increase in aerobic glycolysis was observed under the influence of a constant magnetic field. In the cells of nitella algae, a reduction in dormancy potential during the effect of a magnetic field was detected using the technique of intracellular registration of biopotentials. The effect depended on the intensity of the field being used and on seasonal conditions under which the experiment was conducted. In studying a single nerve cell of the muscle extension receptor of a crab, it was established that a magnetic field of 500 Oe with an exposure of 30 minutes causes an inhibitory reaction in the neurons whose intensity depended on the season. Structural changes in the neurons were characterized by disintegration of small RNA chunks and RNA accumulation
1/2

• USSR •

KOGAN, A. B., et al., Vliyaniye Magnitnykh Poley na Biologicheskiye Ob"yekty, pp 56-68

in the perinuclear area. The physiological activity of adrenalin exposed to a magnetic field changed when it was tested on an isolated frog heart according to the Shtrauber method.

1/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--DIELECTRIC FILMS BASED ON CERIUM DIOXIDE -U-
AUTHOR--(03)-AFANASYEV, K.L., ZAICHKIN, N.N., SACHAVSKIY, A.F.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 156-8
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--DIELECTRIC LAYER, DIELECTRIC MATERIAL, CERIUM OXIDE, ALUMINUM
COMPOUND, ELECTRIC PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/1404 STEP NO--UR/C139/70/013/002/0156/0158
CIRC ACCESSION NO--AT0120197
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE—20NOV70

CIRC ACCESSION NO--AT0120197

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE DIELEC. CHARACTERISTICS AND
ELEC. CAPACITY OF AL-CEO SUB2-AL STRUCTURES WERE STUDIED IN THE RANGE
20-160DEGREES. THE EFFECT OF THERMAL TREATMENTS IS POINTED OUT.

FACILITY: TAGANROG. RADIOTEKH. INST., TAGANROG, USSR.

UNCLASSIFIED

USSR

UDC 539.3

DARAGAN, V. I. and SACHENKOV, A. V.

"On One Approach to the Theory of Plates of Average Thickness"

Kazan', Issled. po teorii plastin i obolochek. No 8 (Investigations in the Theory of Plates and Shells, Collection of Works), Kazan' University, 1972, pp 96-109 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V256 by V. Ye. Chepiga)

Translation: Boundary conditions and a system of bending equations are developed from the Lagrange variation principle for plates with transverse loading. The influence of normal transverse stress, transverse shear strains and the constriction of the plate in thickness is calculated in the equations. The original law of change of plates dislocated by their thickness is determined in the form satisfying the boundary conditions of the theory of elasticity, $u_0 = -h/\pi^2 w_0/\partial x \sin \pi z/h$, $w = w_0 \cos \pi z/h$, (\vec{x}, \vec{y}) , (\vec{u}_0, \vec{v}_0) where w_0 is the bending of the mean surface of the plate; h is the thickness. The components of shear in the transverse direction are expressions which solve the equilibrium equation

$$e_{xz} = \sum_{k=1,3,\dots}^{\infty} \phi_k(x,y) \cos \pi k z/h, (\vec{x}, \vec{y}), (\vec{\phi}_k, \vec{\psi}_k)$$

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USSR

DARAGAN, V. I. and SACHENKOV, A. V., Issled. po teorii plastin i obolochek. No 8, 1972, pp 96-109

With the first approximation ($k=1$) and the equilibrium equation of a three-dimensional body an improved presentation was obtained for bending and tangential displacements of the plate. These improved relationships figure in the calculation of deformation components, stresses and in the variation equation. It is mentioned that beginning with the third (and higher) approximation the number of resolving equations remains constant, and their structure is recurrent. The problem of the bending of sinusoidal, transverse, loading, freely resting, square plates is solved. (5 bibliographic entries)

2/2

USSR

SACHENKOV, A. V. and SHALABANOV, A. K.

UDC 539.3:534.1

"An Investigation of the Free Oscillations of Segmented Plates and Conical Panels by the Theoretical-Experimental Method"

Kazan', Issled. po teorii plastin i obolochek. No 9 (Investigations in the Theory of Plates and Shells, No 9, Collection of Works), Kazan' University, 1972, pp 339-346 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V317 by E. I. Sokolov)

Translation: The problem of the free oscillation of plates in the form of ring segments and of conical, truncated panels under conditions of free rest on the contour is solved by the theoretical-experimental method. Structural formulae for the frequency of oscillation of plates and panels are obtained on the basis of approximate solutions of the corresponding equations of motion. Moreover, for segmented plates with the parameter $t = \ln(r_1/r_0) \leq 2$, where r_1 and r_0 are the radii of the ring-segmented plates, the problem leads to a problem of the free oscillations of theoretical rectangular plates, whose general expression for the oscillation frequency is known. In the case of conical panels the problem is divided in two: a problem of the oscillations of segmented plates, the profile of which corresponds to the projection of the conical panel on a

USSR

SACHENKOV, A. V. and SHALABANOV, A. K., Issled. po teorii plastin i obolochek.
No 9, 1972, pp 339-346

plane perpendicular to the height of the cone, and a problem on the oscillations of a beam of variable cross section. Summarizing the solution for the frequencies of free oscillations of these two problems and introducing a correcting function, the authors obtained a structural formula for the original conical panels. The value of the correcting function in the formulas for the frequencies of oscillation of segmented plates and conical panels is obtained experimentally. (10 bibliographic entries)

USSR

SACHENKOV, A. V.

UDC 539.3:534.1

"Stability of an Orthotropic Cylindrical Shell With an Elastic Filler Under Axial Compression"

Sb. aspirantsk. rabot. Kazan. un-t. Teoriya plastin i obolochek (Collection of Aspirant Works. Kazan' University. Theory of Plates and Shells), 1971, No. 1, pp 43-48 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V406)

Translation: The problem of the stability of an elastic orthotropic circular cylindrical shell with a filler under axial compression is considered. The boundary conditions correspond to free rest. The initial state of the shell is momentless. A problem analogous to the problem of stability of an isotropic shell, the solution of which is known, was obtained by introducing the derivatives of the shift modulus and the Poisson coefficient. A simple formula was obtained for the critical load. The supercritical behavior of the shell is also discussed. V. V. Kabanov.

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USSR

ASADULLIN, G. E., SACHENKOV, A. V.

"Elastic Stability of Cantilever Conical and Cylindrical Envelopes in Bending"

Sb. Aspirantsk. Rabot. Kazan. Un-t. Tochen. Nauki, mekh., Fiz. [Collection of Graduate Papers of Kazan University, Precise Sciences, Mechanics, Physics], Kazan', 1971, No 1, pp 3-10, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V395 by V. P. Mal'tsev).

Translation: Envelopes made by spot welding type Kh18N9 steel strip are used in an experimental study of stability during bending of cantilever conical envelopes fastened at the large base. A transverse force in the same plane as and passing through the center of circularity of the base is applied to the small base. Conical envelopes with tip angles of 0, 30, 45, 60 and 90° were tested. Parameter r_1/r_0 was varied from 1.25 to 6.67 (where r_1 and r_0 are the distance from the tip of the cone along the generatrix to the larger and smaller bases). Analysis of the equations and experimental data produced for critical bending force results in the following recommended formula:

$$P_K = \pi E h^2 \cos \gamma (1 - \gamma^2)^{-5/6} \sqrt{h r_0 \lg \gamma / (r_1 - r_0)^2} \times \\ \times (0.58 + 0.40 \sqrt{r_1 / r_0 - 1})$$

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USSR

ASADULLIN, G. E., SACHENKOV, A. V., Sb. Aspirantsk. Rabot. Kazan. Un-t.
Tochen. Nauki, mekh., Fiz., Kazan', 1971, No 1, pp 3-10.

where E is the Young modulus, ν is Poissons coefficient, γ is the half-aper-
ture angle of the cone, h is the thickness of the envelope.

It is noted that where $\lambda = (r_1 - r_0)/r_0 < 4$, the envelope loses stability
with the formation of a group of inclined waves in the zones of greatest shear
forces. Where at $\lambda = 4$, in addition to the shear form of convecity, rhombic
waves are formed, characteristic for the loss of stability due to axial com-
pression. Further increases of λ cause this form of loss of stability to be-
come predominant.

USSR

S

UDC 614.2(-22)(47):[338:91]

AGAYEV, E. R., SACHKOV, A. M., and ZHURAVLEV, S. M.

"Problems of the Regionalization of the USSR Territories in Planning of Rural Public Health"

Moscow, Zdravookhraneniye Rossiyskoy Federatsii, No 2, 1970, pp 21-25

Abstract: Considerable differences exist in the organization of medical aid to rural populations due to the complex background of economic and geographical conditions. Central and even some municipal bodies responsible for this field are slow and lack imagination in developing a differential approach to this problem. This is due mostly to the lack of good scientific reasoning for planning the medical aid. The authors report on their attempts to solve the problem by regionalizing the country on the basis of economic and geographical factors. No actual data, tables or graphs are reported, but the work which went into the study is enumerated. Factors considered include the density of rural and urban populations, transportation network, scattering of population centers, distances from first-aid stations to medical centers, etc. It was concluded that the organization of rural medical aid should be based on village regions, since they already are discrete administrative units.

1/1

SACHKOV, G.V.

3.7.5 29068
C.73

111-8. CHARACTERISTIC FEATURES OF THE GROWTH OF SINGLE GERMANIUM CRYSTALS

[Article by N. I. Antonov, G. V. Sachkov, D. I. Terletskii, A. V. Stetsko, Leningrad: Neftshchik, 1972, No. 1, p. 106 of the USSR Academy of Sciences, Poluprovodnikovyye Kristally i Plozma, Moscow, 1972, p. 32]

When growing shaped single crystals by the Stepanov procedure, a close relation is observed between the shape of the melt column, the thermal field in the crystal and the melt column and the crystallographic orientation of the crystal. As the practice of growing single crystals demonstrates, the form of the crystal is determined by the outline of the shape-forming factor. The final stage, the shape of the crystallization front. However, in the initial growth column and for the thermal fluxes through the crystal-melt interface.

The presence of octahedral planes capable of severe faceting changes the shape of the crystallization front and the shape of the melt column. It turns out that the structural and electrical properties of germanium single crystals depend to a strong degree on the above indicated crystallization parameters.

When growing monocrystalline rods of germanium from 2 to 10 mm in diameter and with orientations of $\langle 100 \rangle$, $\langle 110 \rangle$, $\langle 111 \rangle$, $\langle 211 \rangle$, $\langle 221 \rangle$, $\langle 321 \rangle$, the degree of crystallization parameters [the thermal field of the melt column, the degree of the shape of the melt column], it was possible to obtain monocrystalline rods was from 1-10 to 100 cm². The dislocation density in them

The distribution of the alloying admixtures in shaped single crystals in the general case is subject to the same laws as are observed when growing single crystals from a melt. However, when growing sharply alloyed single crystals by the Stepanov procedure, there is no long-period bending or short-period stable bending. The presence of the embossing device permits a significant decrease in the intensity of the growth bands.

USSR

RYABOV, B. A. and SACHKOV, G. P.

UDC: 62-50

"Technical Realizability of Invariant Systems With Constant Parameters"

Moscow, *Avtomatika i Telemekhanika*, No 11, 1972, pp 16-21

Abstract: Using the concept of the "coarseness" of a stable invariant system developed by A. A. Andronov (A. A. Andronov, et al, *Teoriya kolebaniy -- Theory of Oscillations -- Fizmatgiz, 1959*), the authors of the present paper theoretically investigate the technical realizability of constant-parameter systems allowing, however, variation of the parameters within specified limits. The Andronov concept is subdivided into coarseness "in the small" and coarseness "in the large." The first is defined as the preservation of the qualitative characteristics of a dynamic system for infinitely small variations of the parameters; the second imposes no limits on the smallness of the variations, allowing them to have finite deviations from the basic values. For the more general case in which the small variations are variable and limited functions of time, it is shown that the system is coarse even for finite variations.

1/1

USSR

UDC 616.988.75-06:616.981.232-097.5

POKROVSKIY, V. I., SACHKOV, V. I., MATVEYEVA, S. M., VENGEROV, Yu. Ya.,
GROMOGLASOVA, Ye. V., and MARKOVA, N. V., Moscow Medical Stomatological Institute

"Group-Specific Antimeningococcus Antibodies in Various Forms of Meningococcus Infection in the Presence of Influenza Viruses"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 11, 1972,
pp 115-120

Abstract: Circulating antimeningococcus group-specific antibodies the formation of which was triggered by meningococcus infection were studied. The precipitation method which included the diffusion of antigens, antibodies, and their complexes through a membrane was used. The blood sera of individuals without any contact with meningococcus infection contained in average 370 μ g antigen-antibody complex/ml, and it increased to 590 μ g/ml for the medical personnel who had contact with patients carrying meningococcus infection. The number of antibodies in patients with pure meningitis was 920, 830, and 620 μ g/ml of blood serum during the first day in hospital, in 5-6 days, and at the end of hospitalization, respectively. Patients in whom meningitis was combined with meningococcemia carried 730, 623, and 502 μ g antibodies/ml of blood serum tested during the same periods. When the meningococcemia was prevalent, the

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USSR

POKROVSKIY, V. I., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 11, 1972, pp 115-120

number of antibodies was 630, 553, and 510 μ g/ml during respective periods. The serologically detected influenza virus Hong Kong A2 produced the sub-clinical form of the meningococcus infection and increase the number of the infection carriers. Increase in the antibody titer toward influenza A2 viruses in patients with the meningococcus infection was, probably, the additional sensitizing factor which led to hyperergia and meningococcemia. This was accompanied by a decrease in the number of the antimeningococcus antibodies and by titer increases of the antiviral antibodies. The immunological process in the case of meningococcus infection combined with respiratory viral infection produced conditions favorable for anaphylactic reactions.

2/2

I. Probability Theory and Mathematical Statistics
A. Probability Theory

USSR

SACHKOV, V. N.

"Random Mappings of Limited Height"

Teoriya Veroyatnostey i Ee Primeneniya [Theory of Probabilities and its Applications], 1973, Vol 18, No 1, pp 122-132 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V8, by the author).

Translation: Let us represent by \mathcal{G}_n^h the set of all mappings σ of finite set \mathcal{Q} of n elements in itself with the condition that the height of the mapping does not exceed h , i.e., the height of the trees of graphs $\Gamma(\mathcal{Q}, \sigma)$, $\sigma \in \mathcal{G}_n^h$ does not exceed h . The set of elements $\sigma \in \mathcal{G}_n^h$ for which i is the least number, such that there exists an integer $p > 0$ with the condition $\sigma^i a = \sigma^{i+p} a$, we will refer to as the i th layer of mapping σ . The asymptote of the number of elements \mathcal{G}_n^h is found as $n \rightarrow \infty$. When even probability distribution is fixed in \mathcal{G}_n^h the h -dimensional random vector $\xi = (\xi_0, \xi_1, \dots, \xi_{h-1})$, where ξ_i is the number of elements of the i th layer of random mapping $\sigma \in \mathcal{G}_n^h$, with the corresponding normalization as $n \rightarrow \infty$ has its own multidimensional normal distribution. The distribution of the number of components of graph $\Gamma(\mathcal{Q}, \sigma)$, corresponding to the random equal probability mapping $\sigma \in \mathcal{G}_n^h$, with the corresponding normalization, has asymptotically normal distribution,

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USSR

Sachkov, V. N., Teoriya Veroyatnostey i Ego Primeneniya, 1973, Vol 18, No 1, pp 122-132.

while the number of cycles of fixed length has asymptotically Poisson distribution. A number of mappings of element $\omega \in \Omega$ with random mapping $\omega \in \Omega_n$ has at the limit the even distribution. The parameters of all distributions are expressed in terms of the real solutions of the equation $L_h(\rho) = 1$, where $L_0(\rho) = \rho$, $L_k(\rho) = \rho e^{L_{k-1}(\rho)}$, $k = 1, 2, \dots, h$.

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USSR

SACHKOV, V. N.

"Mappings of a Finite Set with Limitations on Contours and Height"

Teoriya Veroyatnostey i Ego Primeneniya [Theory of Probabilities and its Applications], 1972, Vol 17, No 4, pp 679-694 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V55, by A. Zubkov).

Translation: Suppose \mathcal{G} is a semigroup of mappings of set \mathcal{X} , consisting of n elements, in itself and $G(\mathcal{X}, \sigma)$ is a graph with oriented arcs corresponding to the mapping $\sigma \in \mathcal{G}$ (graph $\Gamma(\mathcal{X}, \sigma)$ has arc $a_1 a_2$, $a_1, a_2 \in \mathcal{X}$, when and only when $\sigma a_1 = a_2$). The number of arcs in the graph forming a closed contour is called the order of the contour, while the distance (number of arcs) from element $a \in \mathcal{X}$ to the closed contour is height h . Generating functions and asymptotic formulas are found for the number of elements in various sets \mathcal{G}_n , defined by the conditions placed on the height of elements, order of the number of contours, etc.

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USSR

Sachkov, V. N., Teoriya Veroyatnostey i Ego Primeneniya, 1972, Vol 17, No 4, pp 679-694.

The symbol $\mathcal{C}_n^h(A)$ represents the set of such $\sigma \in \mathcal{S}_n$ that the orders of the contours $\Gamma(\sigma, \sigma)$ belong to a fixed set A of natural numbers, and the heights of all elements σ do not exceed h . It is shown that if we consider elements $\mathcal{C}_n^h(A)$ equally probable, the number of closed contours and the sum of their orders are asymptotically normal as $n \rightarrow \infty$. Theorems are also proven on the asymptotic normality of the number of cycles in the solution of equation $x^d = E$ (E is an identity substitution) and the number of trees in a random forest, when the number of points on each tree is an element of the fixed set A of natural numbers.

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USSR

UDC 519.214

SACHKOV, V. N.

"Asymptotic Normality of Distribution of Number of Cyclical Elements of Idempotents of a Symmetrical Semigroup"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], No 14, 1971, pp 180-190, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V31 by V. Kolchin).

Translation: Even distribution is fixed in the class \mathcal{E} of all mappings σ of set A of n elements in itself with the condition $\sigma^2 = \sigma$. For the mapping $\sigma \in \mathcal{E}$ element $a \in A$ is cyclical if $\sigma a = a$. This article is dedicated to proof that number ξ of cyclical elements in a random mapping σ of \mathcal{E} is asymptotically normal as $n \rightarrow \infty$ with parameters $(n/\ln n, n/\ln^2 n)$.

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USSR

UDC 519.217

USSR

UDC: 622.243.144.4

SACHKOV, V. V., KHARIV, I. Yu., TITARENKO, N. Kh., FESENKO, N. N., YAREMENKO, V. A., Poltava Division of Ukrainian Scientific Research Institute for Geological Prospecting

"Ultrasonic Treatment of Drilling Solution in Order to Restore its Structural and Mechanical Properties"

Moscow, Bureniye, No 7, 1973, pp 18-21.

Abstract: A method is studied for restoration of the structural and mechanical properties of solutions by ultrasonic treatment, allowing the restoration of lost properties to be accelerated, while reducing the consumption of materials and expenditures of labor, particularly manual labor, related to the preparation of chemical reagents and treatment of the solution with the reagents. Results are presented from restoration and improvement of these properties during ultrasonic processing directly at drilling sites. The mechanism of action of the ultrasound on natural and artificial solutions is described. The Institute has developed several designs of hydrodynamic vortex-type radiators for production ultrasonic treatment of solutions. These radiators are simple in design and reliable in operation. They can be driven by either centrifugal or piston-type pumps. The mechanism of action of the ultrasound consists in effective

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USSR

Sachkov, V. V., Kahriv, I. Yu., Titarenko, N. Kh., Fesenko, N. N., Yaremenko, V. A., Moscow, Bureniye, No 7, 1972, pp 18-21.

dispersion of particles of clay materials, increasing their number per unit volume and thus increasing the surface of the active solid phase and forming a better developed, stronger coagulation structure in the solutions..

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(2)

USSR

DOLOTOVA, T. S., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,
No 12, 1973, pp 9-13

2 hr, water + threefold austenitization at $1010 \pm 10^\circ\text{C}$ for 1-3 hr,
water + 600°C for 15 hr, air + 850°C for 1 hr, air + 500°C for
2 hr, the following satisfactory complex of mechanical proper-
ties could be obtained: at 20°C - tensile strength $\sigma_t = 155 \text{ kg/mm}^2$,
specification yield point $\sigma_{0.2} = 149.5 \text{ kg/mm}^2$, residual relative
elongation $\delta = 12\%$, relative narrowing $\psi = 56.5\%$, impact ductility
 $a = 5.5 \text{ kg}\cdot\text{m/cm}^2$, and at -70°C - $\sigma_t = 179 \text{ kg/mm}^2$, $\psi = 43\%$, $a = 3.5 \text{ kg}\cdot\text{m/cm}^2$.
Six figures, three bibliographic references.

USSR

UDC 669.14.018.258.8:669-973

KAGAN, YE. S., POTAK, YA. M., SACHKOV, V. V., KOZIOVSKAYA, V. I.,
GRIKUROV, G. N., All-Union Scientific Research Institute of
Aviation Materials

"Stainless Steel of Increased Strength for Cryogenic Temperatures"
Moscow, Metallovedeniye, No 10, 1971, pp 18-20

Abstract: The mechanical properties of the 000Kh11N10M2T (EP678) hardened steel and its welded joints were experimentally investigated at temperatures up to -253°C . Standard steel specimens and specimens with cracks showed a high ductility and low notch sensitivity. With regard to mechanical properties, the investigated steel at -253°C is not inferior to the widely used 30KhGSNA steel at 20°C . The relatively slow cooling in soldering from 980 to 700°C has little effect on the steel plasticity, due to the negligible change of solubility of carbides in this temperature interval. Welded steel joints, without and with additives, possess high plasticity and show a completely ductile fracture from tangential stresses in tests up to -253°C . 000Kh11N10M2T steel is a promising material for cryogenic technology due to its

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KAGAN, YE. S., et al, Metallovedeniye, No 10, 1971, pp 18-20

high yield point ($\sim 90 \text{ kg/mm}^2$) at 20°C and its applicability up to -253°C . 2 illustrations, 1 table, 5 bibliographic references

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SACHKOV, V. V.

EMBELLISHMENT OF MARTENSITE-AGED 00018KHST STEEL BY PRECIPITATION OF
TITANIUM CARBONITRIDES

UDC 650.13.26.24/28:339.4.011

5745 56001

14 May 72

Article by L.M. Sachkov, V.A. Nikol'skaya, O.K. Poyarkina,
V.V. Sachkov, Moscow, Investigative Academy Bank USSR, Metallurgy,
Russian No 1, 1972, signed to press 3 December 1970, pp
159-163

Martensite-aged steels on a base of Fe = 10% Ni-Co, doped with titanium, can be embrittled by slow cooling from 1200-1250°C as a result of the precipitation of Ti(C,N) lattices along the boundaries of the original austenite grain [1]. The sharp drop in plasticity and ductility is usually accompanied by transition to intercrystalline fracture. Pore lattices are detected in the structure of the large forgings and punchings of 00018KHST steel along the boundaries of the austenite grains, and also drawn in the direction of the hot plastic deformation of the Ti(C,N) cluster. The forgings and punchings had a large grain of 1-2 on the scale. The relative contraction of these forgings in the transverse and helpful directions (in the zone of fracturing of the punchings) after quenching from 820° and aging at 480° comprises a total of 2-10%. Triple recrystallization at 925-975° [2] reduced the grain size of the steel, but did not raise the plasticity to the required values. An investigation was made on the temperature range of precipitation of the Ti(C,N) lattices in the 00018KHST steel, their embrittling influence, and also the conditions of altering the structures having the lattices.

The investigation was made on steel melted at the Electrosil' Plant in open arc furnaces with a weight up to 5 t and subsequent vacuum-arc melting in crystallizers up to 600

Steels

UDC: 669.15'24'25'28:539.4.011

USSR

BELYAKOV, L. N., NIKOL'SKAYA, V. L., REVYAKINA, O. K. and SACHKOV, V. V.,
Moscow

"Embrittlement of Precipitation-Hardening Martensitic Steel"

Moscow, Izvestiya Akademii nauk SSSR, Metally, No 1, Jan-Feb 72, pp 159-165

Abstract: This study concerns the temperature range conducive to the segregation of Ti(C, N) particles in the form of networks along the austenite grain boundaries in 00ON18K9M5T steel, the embrittling effect of such networks on the steel, as well as the conditions for correcting structures having such networks. On slow cooling from 1200-1250°C the coarse-grained precipitation-hardened martensitic steel becomes brittle due to the separation of Ti(C, N) networks within the 760-1000°C range. It is shown that brittleness may be eliminated by rapid cooling in water or oil. The structure and mechanical properties of steels with networks and Ti(C, N) segregations may be corrected by quenching the steel from 1200-1250°C (after homogenizing for more than 1 hr) and triple recrystallization at 900-975°C to reduce the grain size. The formation of carbonitride networks may be inhibited by lowering the end temperature of hot plastic deformation in order to preclude further recrystallization. (4 illustrations, 3 tables, 6 bibliographic references).

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USSR

UDC 669.15-194.55:621.785.784

BODYAKO, M. N., SACHKOV, V. V., ASTAPCHIK, S. A., and OLEFIRENKO, V. M., Physicotechnical Institute, Academy of Sciences BSSR

"On the Question of Work Hardening and Softening of Martensite-Aged Steels"

Minsk, Akademiya Nauk BSSR, Izvestiya, Seriya Fiziko-Tekhnicheskikh Nauk, No 2, 1970, pp 46-50

Abstract: A study was made of phase and structural transformations in martensite-aged steel with increased content of cobalt and molybdenum under the conditions of fast continuous heating and after different regimes of cold and hot deformation. The steel had the following chemical composition (wt. %): C -- 0.022; Ni -- 12.4; Mo -- 10.8; Co -- 16.48; Ti -- 0.10; Al -- 0.08; Mn -- 0.02; Si -- 0.05; B -- 0.003; P -- 0.0045. Results are presented of the investigation of heat hardening and softening of martensite-aged steel after cold and hot deformation under conditions of electrical heating at rates up to 300 deg/sec.

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USSR

UDC: 621.372.41

GERASIMOV, Ye. V., GRIGOR'YEV, L. V., POLIKARPOV, P. I., SACHKOVA, G. A.

"Nomograms for Engineering Calculation of the Equivalent Inductance of Quartz Resonators With Lens-Shaped AT-Section Piezoelectric Elements"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiokomponenty (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 5, pp 3-11 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V445)

Translation: For engineering calculation of equivalence and electrode diameter of AT-section lens-type piezoelectric elements, nomograms were used which were plotted on the basis of a formula giving the least divergence between theoretical and experimental data. Resumé.

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USSR

UDC 678.5:666.189.2:620.176

STRELYAYEV, V. S. and SACHKOVSKAYA, L. L., Moscow Aviation Technology Institute

"Determination of Flow Characteristics in the Destruction Shear of Glass Plastics"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 11, Nov 73, pp 1379-1384

Abstract: The characteristics of shear rupture flow K_{IIc} and G_{IIc} are studied to determine the relationship between the linear mechanics of rupture and the modulus of elasticity. Methods are examined for determining and calculating these relationships and results are presented from determination of K_{IIc} and G_{IIc} for plane samples of glass plastics P-2-1 and circular samples of glass plastics 27-63s and AG-4s. Statistical analysis of test data showed that the characteristics of destructive shear flow can be determined accurately for plane and circular samples 10-15 mm wide and 3-5 mm thick with notches perpendicular to the reinforcing fibers measuring 5×0.25 -1.0 mm. The rupture flow characteristics are invariant in the statistical sense with respect to defect dimensions. Statistical distribution of rupture flow is described by a normal distribution. Four figures, three tables, five bibliographic references.

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Acc. Nr:

AP0053360

Abstracting Service:

CHEMICAL ABST: 5-70

Ref. Code:

4A 0228

101497j Properties of hermetic sealants under hot and hot-humid climatic conditions. Pankratov, V. F.; Yakub, O. Yu.; Sadagashvili, G. R. (USSR). *Stroit. Mater.* 1970, (1), 37-8 (Russ). Several polymeric sealants; e.g., nonhardening mastics UMS-50 and Secomastic (I) (British), Thiokol sealant, GS-1, Polyef, and porous Poroizol (II), Gernit P (III), and PRP-1 were tested in Tbilisi (dry climate) at -23 to +40° and in Batumi (humid climate) at -20 to +41° for 12 months. II and III deteriorated slightly in the hot-humid climate, the latter being the more stable of the 2. I, tested in Tbilisi and Batumi, formed a protective impermeable coating which inhibited its degradation. GS-1 retained adequate tensile strength and elongation at break, although its properties slightly deteriorated in Tbilisi.

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UDC 616-009-097

PESHKUS, YU. K., LUKSHIS, L. P., and SADAUSKAS, P. B., Institute of Biochemistry, Academy of Sciences Lithuanian SSR

"Immune Characteristics of Cattle Lympholeukemia. 6. Agglutinin Formation and Blood Serum Protein Fractions After Immunization With Br. Abortus Bovis No 12 Vaccine"

Vil'nyus, Trudy Akademii Nauk Litovskoy SSR, Seriya B, Vol 2 (58), 1972, pp 89-98

Abstract: Cows with chronic lympholeukosis are able to produce antibodies, but the formation of agglutinins is somewhat depressed in them. Thus, after vaccination, the agglutinin titer in sick cows is 1:55 on the 5th day (1:90 in healthy cows), reaches a peak on the 20th day (15th day in healthy cows), and declines faster than in healthy cows. Serum protein concentration in sick cows is somewhat reduced, and the rise after vaccination, from 7.12% initial to 7.27%, is smaller than in healthy cows, from 7.76% initial to 8.20%. In sick cows, albumin level is 3.5% lower than, alpha and beta globulin levels are 2% higher than, and gamma globulin concentration is the same as in healthy cows. In sick cows, vaccination reduces albumin by 3-7%, raises alpha and beta globulins by 1-3%, but induces no significant change in gamma globulin. In 45-60 days, the various protein fractions return to their initial levels. In

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PESHKUS, YU. K., et al., Trudy Akademii Nauk Litovskoy SSR, Seriya B, Vol 2 (58), 1972, pp 89-98

healthy cows, vaccination reduces albumin by 2-4%, does not change alpha and beta globulins, but increases gamma globulin by 1-3%. These effects are also over in 45-60 days. There is a good correlation between gamma globulin concentration and the agglutinin titer.

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USSR

LUKSHIS, L. P., and SADAUSKAS, P. B., Institute of Biochemistry, Academy of Sciences Lithuanian SSR

"Immunological Characteristics of Cattle Lympholeukosis. 1. Changes in the Phagocytic Properties of Cells of Inflammation Exudate After Immunization With *Brucella abortus bovis* No 19 Vaccine"

Vilnius, Trudy Akademii Nauk Litovskoy SSR, Seriya B, Biologicheskiye Nauki, Vol 2, 1970, pp 127-134

Abstract: The phagocytic characteristics of cells of the inflammation exudate (neutrophilic leukocytes and macrophages) which migrated into the erosion of living horn tissue were studied in healthy cows and in cows with chronic lympholeukosis before and after immunization with *Br. abortus bovis* vaccine. Immunization was carried out intramuscularly with 45-50 billion bacterial cells. Inflammation exudate from horn tissue was obtained by the horn window method developed by P. B. Sadauskas and V. B. Dabkyavichyus and involving local application of a *Brucella* culture to the erosion. In cows with lympholeukosis in the leukemic stage, the phagocytic activity was lowered after immunization 15.7 and 22.9% for neutrophilic leukocytes and

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USSR

LUKSHIS, L.P., and SADAUSKAS, P. B., Trudy Akademii Nauk Litovskoy SSR, Seriya B, Biologicheskiye Nauki, Vol 2, 1970, pp 127-134

macrophages, respectively, together with a simultaneous decrease in the intensity of phagocytosis. In cows with this disease in the subleukemic stage, the reduction in phagocytic activity after immunization was by 10.2 and 3.8% for neutrophilic leukocytes and macrophages, respectively. In healthy cows, immunization produced an increase of phagocytic activity by 32.2 and 31.3% for neutrophilic leukocytes and macrophages, respectively, accompanied by an increase in the intensity of phagocytosis. In both immunized and nonimmunized cows with lympholeukosis, phagocytosis (as indicated by the condition of the Brucella cells that were phagocytized) was defective and incomplete, although the phagocytic activity and intensity of phagocytosis were at a high level in the diseased cows that had not been immunized.

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USSR

UDC 616-036.882-08:615.471:616.127:616-089.583.29 (1)

MESHALKIN, Ye. N., RED'KO, Ye. S., STUNZHA, Ye. A., SADCHIKOV, I. V.,
FILIMONOV, Ye. S., and SERGEYEV, Ye. N., New Siberian Scientific Research
Institute of the Pathology of Circulation, Ministry of Health RSFSR

"Resuscitation of the Organism After Prolonged Clinical Death by Means of an
Artificial Circulation Apparatus in Association With Hemodilution and Hypo-
thermia"

Kiev, Vrachebnoye Delo, No 4, 1973, pp 73-77

Abstract: To refine the method, experiments were conducted on 72 anesthetized dogs in which uni- or bilateral thoracotomy was performed and clinical death (disappearance of EEG waves) caused by discontinuation of artificial respiration and induction of cardiac arrest. Eight to 18 min after clinical death, resuscitation was begun with blood flow maintained by a pump either through the coronary and carotid arteries or through the whole body at rates of 60-120 ml/kg/min, under normothermia or hypothermia, with utilization of heparinized donor blood or a plasma expander to achieve hemodilution. The total perfusion time was 40-60 min. Resuscitation was considered successful if normal EEG, effective heart activity, spontaneous respiration, renal function, motor activity, and unconditioned and some conditioned reflexes were restored. The
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USSR

MEShALKIN, Ye. N., et al., Vrachebnoye Delo, No 4, 1973, pp 73-77

optimal conditions -- whole-body perfusion at a rate of 80-100 ml/kg/min, with blood diluted to about 6-8 g% Hb, and a hypothermia of 28-30°C achieved in 5-8 min -- yielded a recovery rate of 80%. This method was subsequently applied on 19 patients during cardiac surgery complicated by cardiac arrest and failure of all other therapeutic measures. Five patients were successfully resuscitated; they recovered and were eventually discharged from the hospital in satisfactory condition. The case history of a 12-year old cardiac surgery patient is given.

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USSR

UDC: 621.386.6-181.48

SADCHIKOV, P. I., NOVOKRESHCHENOVA, O. Ye., MAKAROV, V. A.

"Strength of Contact Joints in Hybrid Thin-Film Circuits"

Elektron. prom-st'. Nauch.-tekhn. sb. (Electronics Industry. Scientific and Technical Collection), 1972, No 1, pp 64-66 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V275)

Translation: The effect of the welding process on the physicommechanical (strength) properties of contact joints in hybrid microcircuits is considered. The causes of development of defective joints are determined. Resumé.

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Biochemistry

USSR

UDC 617-001.28-074:577.1

GUS'KOVA, A. K., SADCHIKOVA, E. N. and ORLYANSKAYA, R. L., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"Significance of Biochemical Studies in the Clinical Picture of Radiation Lesions in Man"

Moscow, Meditsinskaya Radiologiya, No 4, 1971, pp 52-59

Abstract: A review is presented of the Soviet literature on shifts in the biochemical indexes reflecting the various forms of radiation sickness in man, severity of the lesions, hormonal and metabolic disorders, etc. The diagnostic value of the indexes is discussed and reference is made to their value as criteria of the effectiveness of therapy. The data are summarized in four tables (acute radiation sickness from a single exposure to gamma or neutron radiation, lesions caused by hepatotropic isotopes, long-term effects and clinical prestages of lesions by osteotropic elements, lesions with maximum distribution of radiant energy in muscle tissue) under the various tests, optimum time for running the tests, and possible significance of abnormalities.

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USSR

UDC 613.647:621.37/39.029.64

SADCHIKOVA, M. N., and NIKONOVA, K. V., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR

"A Comparative Assessment of the Health of Workers Exposed to Microwaves of Different Intensity"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 9, Sep 71, pp 10-13

Abstract: Clinical examinations were performed on two comparable groups of radar plant employees periodically exposed to microwaves. In the first group the irradiation intensity was several milliwatts per square centimeters, while in the second group, due to protective arrangements, the irradiation intensity was 100 times smaller. Increased fatigability and irritability, memory impairment, bradycardia, and moderate thrombocytopenia were observed in both groups. The feeling of heaviness in the head, sleepiness in the daytime, cardiac pain, ECG changes, and moderate leukopenia were more pronounced in the first group, while vascular leukopenia were more pronounced in the first group, while vascular hyperactivity (dermographia, hyperhydration, and blood pressure fluctuations) were more prominent in the second group. On the whole, vascular dysfunction was equal in both groups (about 30% versus 16% in con-
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SADCHIKOVA, M. N., and NIKONOVA, K. V., Gigiyena Truda i Professional'nyye Zabolevaniya, No 9, Sep 71, pp 10-13

trols), while the asthenic syndrome was more pronounced in the first group (45% versus 15.6% in the second group and 5% in controls). It is concluded that microwave irradiation is harmful to human health; however, the mode of action (cumulative effects versus single, large irradiation doses) remains to be elucidated.

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USSR

UDC 616.1-02:613:647:538.3

GLOTOVA, K. V. and SADCHIKOVA, M. N., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"Characteristics of the Development and Clinical Course of Cardiovascular Shifts Due to Chronic Exposure to Ultrahigh-Frequency Electromagnetic Fields"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, Jul 70, pp 24-28

Abstract: Experimental and clinical results have indicated that exposure to microwaves in the centimeter range produces shifts in the nervous system. A study was made of 105 patients who had been chronically exposed to such radiation for many years to determine cardiovascular shifts. Most of the patients with an asthenic syndrome complained of headaches and irregular sleep. Many reported pain in the heart region and exhibited arterial hypertension. Another group of patients exhibited autonomic-vascular dysfunction, frequently accompanied by hypothalamic insufficiency and hypertensive and angiospastic reactions producing disturbances in the cerebral and coronary circulation. The work capacity of these patients was greatly reduced. Sinus bradycardia was observed electrocardiographically in some patients. It was concluded that the reactions of the cardiovascular system to microwave fields are clearly linked to shifts in the nervous system, particularly in the highly autonomic

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GLOTOVA, K. V. and SADCHIKOVA, M. N., Gigiyena Truda i Professional'nyye
Zabolevaniya, No 7, Jul 70, pp 24-28

branches, and that they depend on individual characteristics of the organism.

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USSR

UDC 617-001.21-02:538.3-092:616-008.9

PAVLOVA, I. V., DROGICHINA, E. A., SADCHIKOVA, M. N., and GEL'FON, I. A., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"The Role of Some Biochemical Disturbances in the Pathogenesis of Radiation Sickness"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 20-23

Abstract: The results of an analysis of biochemical indices in 70 patients with different forms of chronic exposure to the effects of microwaves are reported. The patients were 28-39 years old, with 5-10 years of service. Several deviations from normal levels were observed: disproteinemia, due to increased β - and γ -globulins, and low mercury bichloride test, while the activity of liver enzymes appeared to be normal. About half of the patients showed high levels of cholesterol, and 2/3 had low blood levels and high urinary excretion of chlorides. Blood sugar levels after a glucose load were within the normal range, but atypical. These shifts indicate disruption of mechanisms regulating the activity of the sympathetic-adrenal system, including shifts in the functional condition of the hypothalamus-hypophysis-adrenal system.

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USSR

UDC 547.279

TKALENKO, V. G., AMARSKAYA, A. P., KOLODYAZHNYI, Yu. V., SADEKOV, I. D.,
MINKIN, V. I., and OSIPOV, O. A., Rostov-on-the-Don State University

"Synthesis and Physical Chemical Properties of Aromatic and Heterocyclic
Derivatives of Tellurium. V. Investigation of the Complex Formation of
 TeCl_4 With Schiff's Bases"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1943-1947

Abstract: Novel complex compounds of TeCl_4 with benzalanilines and β -hydroxynaphtalanilines have been synthesized. On the basis of IR spectroscopic study of these complexes the conclusion was reached as to the localization of the coordination bond in azomethine molecules. It has been shown that the equimolecular complexes are energetically more feasible and their structures have been discussed. The heats of complex formation reactions are correlated with the substituent constants in the aldehyde (σ^+) and aniline (σ^0) nuclei of the azomethine molecules.

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1/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--INTRAMOLECULAR HYDROGEN BONDING AND REACTIVITY OF ORGANIC COMPOUNDS
-U-
AUTHOR--(03) SADEKOV, I.D., MINKIN, V.I., LUTSKIY, A.YE.
COUNTRY OF INFO--USSR
SOURCE--USP. KHIM. 1970, 39(3), 380-411
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TOPIC TAGS--HYDROGEN BONDING, IONIZATION, ALKYLATION, CHELATE COMPOUND,
CHEMICAL REDUCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0076 STEP NO--UR/0074/70/039/003/0380/0401
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UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125911

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW WITH 200 REFS. THROUGH 1968 COVERING THE EFFECTS OF H BONDING ON VARIOUS REACTIONS SUCH AS IONIZATION OF CARBOXYLIC ACIDS, ALKYLATION REACTIONS, DECARBOXYLATIONS, REDN., SUBSTITUTION, CHELATION AND BASICITY, INHIBITION OF REACTIONS BY INTERNAL H BONDING AND STABILIZATION OF COMPODS., THEREBY.
FACILITY: ROSTOV.-NA-DONU GOSUNIV., ROSTOV-ON-DON, USSR.

UNCLASSIFIED

USSR

UDC 634.121.8-52:681.32.06

SADEKOV, R. KH., FURSOV, V. N., BADAMSHIN, O. U.

"Methods of Evaluating the Evenness of Motor Vehicle Roads"

Tr. N.-i. i proyekt. in-ta mekhaniz. i avtomatiz. upr. proiz-vom v avtomob. promsti (Works of the Scientific Research and Planning and Design Institute of Mechanization and Automation of Production Control in the Motor Vehicle Industry), 1971, vyp. 1, pp 103-107 (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A626)

Translation: An instrument is described for measuring the microprofiles of roads and highways. An algorithm which is the basis for the operation of the device is presented. There is 1 illustration and a 1-entry bibliography.

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USSR

UDC 613-003.96:613.166+615.75.6:614.779

SULTANOV, F. F., ~~SADIKOV, G. N.~~, and KARLYYEV, K. M., Institute of Physiology and Experimental Pathology in the Arid Zone, Academy of Sciences Turkmen SSR

"Heat Adaptation and Nucleic Acid and Protein Synthesis in Animal Organs"
Report II. The effect of multiple exposure to high external temperature on RNA and protein synthesis in the organs of white rats.

Ashgabat, Izvestiya Akademii Nauk Turkmenskoy SSR: Seriya Biologicheskikh Nauk, No 4, 1971, pp 3-7

Abstract: To study adaptation to heat, the rate of RNA and protein synthesis was determined in the liver, kidneys, heart, and brain of white rats divided into three groups: Trained rats were kept each day for 6 hours in a thermo-chamber where the initial temperature of 26°C was increased by 1° each day for 10 days and then maintained at 36-37°C for the next 20 days. Untrained rats were exposed to a temperature of 36-37°C during one 6-hour session only. Control rats were kept at room temperature. The animals were decapitated on the 10th, 20th, and 30th days; protein synthesis was determined by the S³⁵ method, and RNA synthesis by the P³² method. The results revealed that the rate of protein and RNA synthesis in myocardium and brain tissue was essentially the same in all three groups on all three days. After 10 days
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SULTANOV, F. F., et al., Izvestiya Akademii Nauk Turkmenskoy SSR: Seriya Biologicheskikh Nauk, No 4, 1971, pp 3-7

of training, protein and RNA synthesis in liver and kidney tissues in trained rats was reduced by approximately the same degree as in untrained rats, that is, 12-24% below the control level. On the 20th and 30th days of training, these parameters returned to the control level. It is concluded that heart and brain tissues are immune to hyperthermia as far as protein and RNA synthesis is concerned, while liver and kidney tissues can adapt to heat through repeated training.

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ZABELIN, V. and SADIKOV, V.

"All Union Conference on Research in the Field of General Epizootiology"

Moscow, Veterinariya, No 11, 1972, pp 122-124

Abstract: The title conference was held in the city of Ul'yanovsk (Ukraine) in August 1972. The consensus was that while progress has been made in preventing and eradicating a number of infectious diseases of animals, the epizootic situation with respect to many other infectious and parasitic diseases remains serious. The papers discussed the epizootiology of helminthiasis (Ye. Ye. Shumakovich, V. S. Yershov, D. K. Polyakov, I. V. Abramov), piroplasmiasis of cattle (F. A. Petunin, V. I. Yermoshkevich, O. N. Khudaynazarova), prevalence of fungus diseases (A. Kh. Sarkisov), specific prevention of fungus diseases (Sh. T. Rasulev, Ye. A. Marinin, Kh. A. Dzhlavyan, Z. A. Urmanov), pathogenic microorganisms in the environment, factors in the transmission of infections, and methods of breaking the epizootic chain (A. A. Polyakov), mechanism of action of disinfectants on microorganisms and survival time of helminth eggs and larvae in liquid manure), and economic costs of epizootic control measures (I. V. Sorokin, V. V. Vinokurov).

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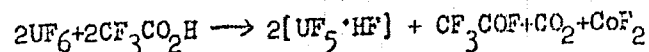
UDC 546.791.6-386

S
SADIKOVA, A. I., NIKOLAYEV, N. S., RASSKAZOVA, I. A., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Moscow, USSR Academy of Sciences

"Reaction of Uranium Hexafluoride with Trifluoroacetic Acid"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 7, 1970, pp 2012-2013

Abstract: The study examines the behavior of uranium hexafluoride in trifluoroacetic acid. Experiments showed that initially the hexafluoride dissolves readily in the acid (15 gm UF_6 in 100 ml CF_3CO_2H), forming a weakly colored solution, but then, upon standing, green crystals of composition $UF_5 \cdot HF$ are formed according to the following scheme:



After precipitation of crystals, reaction products and excess trifluoroacetic acid were removed from the reaction vessel by vacuum evacuation and collected in two traps at -72 and $-196^\circ C$ (temperature of liquid nitrogen). It was found that uranylfluoride dissolves poorly in trifluoroacetic acid: its solubility at $20^\circ C$ is less than 0.01 percent.

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UDC 612.015.31:546.791]-088.1

S
SADIKOVA, N. M., POLONSKAYA, Ye. K., and GOLUTVINA, M. M.

"An Express Method for Determining Natural Uranium in Biological Substrates"

Moscow, Meditsinskaya Radiologiya, No 2, 1970, pp 65-69

Abstract: An express method for determining uranium in urine, that is specific, rapid, and simple, is proposed. It does not require the preliminary removal of interfering admixtures or other lengthy chemical procedures, thus reducing the amount of uranium lost in the course of analysis. The method is based on thermal destruction of small portions of urine (0.1-1 ml), fusing the residues with a fluoride mixture (NaF+LiF), and determining the intensity of fluorescence of the melt. Though slightly less sensitive than the extraction method, it is more or less equal to it in accuracy. The proposed method is also suitable for determining uranium in soft tissues and in feces.

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Acc. Nr: **AP0034680**

Ref. Code: UR 0241

PRIMARY SOURCE: Meditsinskaya Radiologiya, 1970, Vol 15,
Nr 2, pp 65-69

Sadikova, N. M.; Polonskaya, Ye. K.; Golutvina, M. M.

Summary

The method of determining uranium in the urine is based on the thermic destruction of small quantities of the urine (1 ml). fusion of remnants with a fluoride mixture and evaluation of the activity of the alloy fluorescence. The sensitivity of the method is $3 \cdot 10^{-9}$ g/l of urine, the loss coefficient — 1.0 ± 0.15 . The method is simple and therefore is suitable for serial investigations. The authors discuss the possibility of using direct instrumental method for determining the uranium content in the feces and tissues. The article gives the values of coefficients of losses, the sensitivity and accuracy of determination.

D.A.

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Biochemistry

USSR

BRAGINSKAYA, F.I., SADIKOVA, S.KH., and EL'PINER, I.YE., Institute of Chemical Physics, Academy of Sciences USSR

"Study Formation of Complexes of Nucleic Acids With Polyanions by Means of Ultrasound Waves"

Moscow, Biofizika, Vol 15, No 2, Mar/Apr 70, pp 274-276

Abstract: For the first time, determination of the attenuation of ultrasound waves was used to study the interaction of nucleic acids with polyphosphates /yeast RNA, $(\text{NaPO}_3)_{75}$, and $(\text{NaPO}_3)_3$. Attenuation of ultrasound was measured with an impulse device in a frequency range of 12-68 megacycles per second. Along with the study of acoustic parameters of polymers, the method of metachromasia with toluidine blue was used. In the presence of RNA or polyphosphate, the absorption maximum of toluidine blue is displaced toward shorter wavelengths (600 millimicrons and 540 millimicrons, respectively), while in the presence of the complex it is shifted toward longer wavelengths (620 millimicrons). The linear polyphosphate $(\text{NaPO}_3)_{75}$ apparently becomes attached to the nonhelical portions of the RNA molecule, and the latter acquires the properties of a double helical polymer. Unlike the $(\text{NaPO}_3)_{75}$, when the $(\text{NaPO}_3)_3$ is added, it does not change the metachromatic reaction of RNA with the dye.

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BRAGINSKAYA, F.I., et al, Biofizika, Vol 15, No 2, Mar/Apr 70, pp 274-276

The metachromatic data agree with the results obtained in studies of the acoustic parameters of polyphosphates during their interaction with RNA. Under certain conditions (in hydrogen, exposure of 2 hours, frequency of 750 kilocycles/sec, intensity of 10-12 watts/cm²), ultrasound treatment of RNA results in a breakage of the RNA molecules in their nonhelical regions. As a consequence, the treated RNA loses some of its ability to interact with (NaPO₃)₇₅.

USSR

UDC 615.31:547.564.47.099

VASILENKO, N. M., VOLODCHENKO, V. A., NAKONECHNYI, A. A., and SADOVKA, YE. R.,
Industrial Toxicology Laboratory, Kharkov Scientific Research Institute of
Labor Hygiene and Occupational Diseases

"Comparative Toxicological Evaluation of para-Phenetidine and Cyanoethyl-para-Phenetidine"

Moscow, Farmakologiya i Toksikologiya, Vol 35, No 3, May/Jun 72, pp 367-369

Abstract: Albino rats and rabbits were used in the tests. Para-phenetidine was injected as a 5% emulsion and cyanoethyl-p-phenetidine as a 25% suspension in a 3% starch gel. Subacute toxicity was induced by injection of the material into the stomach with 0.1 LD₅₀ six times a week for one month. No cumulative effects were observed. The hemoglobin content, the erythrocyte, reticulocyte, and leukocyte content and leukocyte formula were determined. The Heinz bodies were also calculated. At the end of the tests the animals were sacrificed and the weight coefficient of the internal organs determined. Methemoglobin and sulfhemoglobin contents were also determined. The high toxicity of para-phenetidine is due to its high methemoglobin-forming activity. The introduction of the cyanoethyl group weakens this activity, but does not exclude the

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VASILENKO, N. M., et al., Farmakologiya Toksikologiya, Vol 35, No 3, May/Jun 72, pp 367-369

possibility of the combined formation of methemoglobin and cyano hemoglobin which in its turn contributes to the inhibition of the cyano group in the brain, preventing its transfer to the tissue and consequently blocking respiratory cytochromoxidase.

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